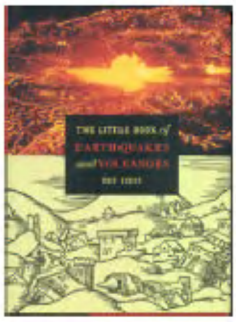

The Little Book of Earthquakes and Volcanoes. Rolf Schick. Coppernicus Books, New York. 2002. 164 pp. Price: US $ 20.

Whenever the ground shakes or a volcano erupts, we call it a natural disaster. How justified are we to do that? It is educative to recall what more than 100 years ago, Mario Baratta, an Italian seismologist wrote: people are not killed by earthquakes, but by their buildings. Earthquake is just a visible manifestation of myriad processes that take place within the earth. Cumulatively these processes build up mountains and carve out new valleys. The other activity – volcanic eruptions – also contributes more to sustain life rather than destroying it—in the longer term they replenish the water in the oceans, increase the soil fertility and influence the climate. Thus, earthquakes and volcanism are part and parcel of earth processes, which is the underlying message of the book under review.

The author starts with a broad overview of the structure of the earth and plate tectonics and it builds on the earliest theories on earthquakes. He brings out the fact that internal heat is what fuels tectonism. From this fundamental proposition, the author goes onto layered internal structure of the earth, and eventually to plate tectonics – the grand theory that explains the occurrences of earthquakes and volcanoes. The historical perspective on the early earthquake research provided in the book largely draws upon the work of European geologists. This helps the reader to understand the European background on earthquake studies, which is generally found to be absent in the books and articles written by American authors. The turning point in earthquake studies, largely an American initiative as pointed out in this book, is the 1906 San Francisco earthquake. This was the time when Harry Fielding Reid, a professor of geology at the John Hopkins University, developed his theory of elastic rebound.

The later part of the book covers the basics of the earthquake source mechanism, rupture propagation and style of faulting based on the modern interpretations. The book devotes some pages also for introducing the earthquake scene in California, with a few case histories. This part, however, is written rather cursorily, hardly explaining why the examples of earthquakes chosen are important from the perspective of understanding their mechanisms. I also found the discussion on the intraplate earthquakes not very wholesome. Here, I expected the author to discuss about the 1755 Lisbon earthquake, which occurred closer to home, equally intriguing, if not more, compared with the 1811–12 New Madrid earthquakes. No popular books on earthquakes can do away with prediction, considering the public interest. This book is no exception. The author is able to focus on the major trends in this field, and most importantly, he cautions against the pitfalls in attempting short-term predictions of earthquakes.

Historical development of volcanology, and the mechanisms of origin and eruption of volcanoes form the bulk of the remainder of the book. The scholarly force of the author is felt more when he deals with volcanoes, which speaks of his personal involvement in the volcanic studies, and may be also because of a number of European examples available for discussion. Most famous of them are Vesuvius and Etna, all in the Aegean Sea, which fascinated explorers and ancient chroniclers like Pliny. The book covers in detail the process of magma development, eruption mechanisms, volcanic explosion effects and eruption products. A lay reader may find this part a little difficult to follow, although those who have some geology background might find the discussion more enjoyable. The discussion on volcanoes is capped by a tour of volcanoes in the Solar System. Schick has made a good effort to highlight the interesting features of volcanism in the Solar System, without being too technical. The chapter on volcanic hazard and forecast discusses the possibilities and limitations of such exercises. Again, the author is not too complacent and warns that many of these predictions were not foolproof and there were many cases of false alarms, despite the prevalent mood of optimism among researchers.

From a popular point of view, I find the discussion on influence of volcanic eruptions on climate an easy read. This section starts with a trick question – what does the writing of *Frankenstein*, which belongs to the early genre of science fiction, have in common with the French revolution? Interestingly, the author finds out a surprising common thread in the genesis of these seemingly unrelated events – certainly an excellent way to start a scientific discourse meant for popular understanding. The powerful eruption of Tambora volcano on an island east of Java in April 1815 influenced the first event and eruption of Laki fissure in Iceland in 1753 played a role in the second event. The gases and ashes from the volcanic eruption absorbed and scattered radiation from the Sun. Consequently, the ground temperature decreased ending up in long cold spells and poor harvest. The cold spell forced Mary Shelley who was on vacation at Lake Geneva to keep herself indoors. Since there was nothing else to do, she wrote *Frankenstein*! Is this argument too far fetched? Then consider the next example of another eruption in Iceland resulting in the poor harvest in Europe, which was the last straw on the camel's back, forcing the poor peasants to start the French Revolution. In this chapter, the author is able to focus on the message very effectively.

This book, primarily aimed at non-scientific audience, is written in simple prose. The readers, however, may find the figures unattractive because of their spartan style and the dull, rambling descriptions. Lack of an index map showing the localities that are being discussed is also a minus point. But the overall production aspects of the book are impressive; in particular I was attracted to the jacket design and illustrations. All in all, this cute little book is a welcome addition to the growing body of popular books on earthquakes and volcanoes.

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